

June 23, 2015

Ms. Julie Saare-Edmonds
Senior Environmental Scientist
Department of Water Resources
1416 9th Street
Sacramento, CA 95814

Re: Model Water Efficient Landscape Ordinance Update 2015

Dear Ms. Saare-Edmunds,

This summary is to address **the insufficiency** of the Model Water Efficient Landscape Ordinance and to suggest solutions which will reduce water demand more immediately in response to current drought conditions.

Since most landscaping in California has been already installed, it will take years to achieve any appreciable reduction in water consumption by setting new standards for new landscapes. The drastic measures suggested will accomplish reduction in water demand only on the long run, at a high cost to both residences and to industries.

However, a moderate increase in water distribution efficiency (75% -80%) will achieve better results and achieve them much more quickly.

The ordinance, as stated, will not result in lower water consumption in the short term because most facilities are already in place and are either untested or have low efficiency water distribution systems. Therefore, the current ordinance will have the most impact on future water consumption, not actual current water consumption. The real impact of this ordinance will occur during a 10-20 year period, that is, relatively far into the future.

The following summarizes the mostly technical solutions which will achieve immediate reductions in water consumption.

ON AVERAGE, WE SAVE 20-40% WATER REGULARLY (depending on previous use patterns) WITHOUT MAKING CHANGES TO PLANT MATERIAL. THESE SAVINGS EXCEED THE CURRENT STATE REQUIRED CUTBACKS.

I was a participant in the development of the sample ordinance AB-1881 with Marsha Prilwitz's (since retired) group as well as in its predecessor Ab-325, which was authored by Assemblyman Steve Clute.

I was the President of ASIC (American Society of Irrigation Consultants) Southern California chapter at that time. I invited Mr. Clute for a chapter presentation of the proposed sample ordinance and spoke with him at that time about the various technical solutions to better achieve the goals of that ordinance.

There are many reasons why that ordinance did not live up to its expectations:

1. No tools were available to designers and operators of irrigation systems to measure water distribution efficiency at the time of design. The law simply described the goals, but did not set technical tools and methodologies and even standards to achieve them.

Therefore, landscape architects and irrigation designers needed to rely heavily on post-construction water audits. By that time, it was often very difficult and very costly to achieve the desired savings so, in most cases, installations were accepted as they were.

Although the implementation of water audits served as a good start, since then it has become evident that a water audit has only limited value because

- it only samples specific, often unrepresentative, areas (complete "wall to wall" testing being cost prohibitive).
- it is unrepeatable because of varying wind conditions which distort the results.
- it assumes that tested and untested areas have identical distribution efficiency. (Water distribution immediately next to the tested area may be vastly different.)
- testing the water distribution after installation and then correcting inefficiencies is rarely cost effective and consequently rarely accomplished.

These were the findings of Metropolitan Water Districts study conducted over a decade ago.

Solutions to these problems are now available. Computer modelling of water distribution efficiency (not densogram, but modelling) has become available in the past few years.

In the past, most of the gains to reduce water consumption were made adjusting Et0 values. However, water distribution efficiency was not addressed and water distribution analysis technology was not widely available.

Pre-construction computer modeling of water distribution efficiency eliminates the problems of a physical water audit because:

- the system is tested during design, (or during rehabilitation in the case of existing systems) prior to installation
- the model tests every square foot, not only sample areas

- the MAWA and EWU calculations are real, based on actual modeling, not just on an assumed irrigation efficiency, Current practices are based on calculations which “on paper” always show the system using less than the maximum allowable amount of water. However, during the operational phase of the project, these projected consumption values are never compared to actual usage nor enforced.
- with computer modeling, head location are gps-ed and therefore the model is duplicated on the field accurately, within 1 centimeter, within the projected consumption values..
- when modeling is coupled with disciplined water management (for example, when heads need to be replaced, the same head and nozzle will be installed) the system will use the same amount of water that is predicted in the model (paralleling the Et0 curve).
- from the beginning, the Visual Control Platform (VCP) connects the controller to actual field water distribution
- when water consumption exceeds the water budget, the VCP immediately sends an alert. Since the database is in the cloud, the data will be connected to water providers’ live demand monitoring

2. Inefficiency was inevitable with stand-alone field controllers. (However, these controllers can now be centralized in the CLOUD.)

90 % of irrigation controllers are stand-alone field controllers and the majority of central controllers (with perhaps the exception of golf courses) are underutilized. The frequency of adjustment of the controllers is low, because of the time required to adjust to changing weather conditions and because of the required physical presence at the controller location. Therefore, climate optimal run time adjustments are made less frequently than necessary or are simply not made at all, in many cases.

However, recent advancements in technologies now allow us to operate stand-alone controllers through the cloud. The benefits of cloud based operation are:

- adjustments (automatic or manual) can as frequent as needed and can follow the Et0 curve precisely.
- a single field controller can be centralized through the cloud.
- actual design data (such as water distribution efficiency) run the controller and drive a Visual Control Platform (VCP).
- it can operate on any manufacturer’s controller. The “smart controller functions” are built into the irrigation design itself and the VCP instantly upgrades even the most outdated controller.

This cloud based technology is now available to incorporate both new and existing controllers into a VCP which allows for the *remote* adjustment of stand-alone controllers.

3. “Wick” irrigation was not exploited for non-playable or lightly used turf areas

Wick irrigation, invented by Dr Hung of Cal Poly, Pomona, (who was my advisor at that school), achieves water distribution efficiency in the 92-95% range.

It is applicable in lightly used or non-functional decorative turf areas. Detailed study conducted by Dr. Hung and Eudel Vis of Cal Poly, Pomona, and by Mike Henry of UC Riverside Extension).

In summary

We suggest the establishment of a valve by valve water distribution efficiency range between 75-80% for irrigated areas, with a certified, modelled and verified water distribution model. (A good overhead irrigation design depending on the shape of the landscaped area, is in the 75%-80% range maximum efficiency range.) Modelling efficiency is the *only* way to manage the most important remaining uncontrolled variable in water management.

Additional reasons against the implementation of the suggested ordinance

- Drip irrigation does not work in all applications; over time, many of the least water consuming plants grow over drip lines especially on slopes, and block access to drip emitters, so malfunctioning emitters are discovered only after the plants have died.
- The cost of artificial turf is approximately 10 times the cost of real turf, it needs to be replaced every 10 years, and human falls on artificial turf are more painful and more dangerous than falls on real turf.

The 92% suggested efficiency standard for commercial projects will result in more exclusive use of artificial turf, because it is simply technically unachievable with overhead irrigation, even in the case of paying fields.

The suggested water distribution efficiency of 92% does not allow the use of functional turf in commercial application. This is impractical since it will not allow for the construction of parks and sport fields necessary for youth sport development.

Long term solutions to water supply fluctuations:

Although Water Management Group is not directly involved in the supply side of water management, we suggest the development of long term water supply solutions for the state instead of short term solutions which curtailing living standards. **Commoditization of the water supply would go a long way to reduce water supply fluctuations.**

Sincerely,

Geza Kisch – Principal

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First, let me object on the basis of process. We were among the drafters of the original MWELO (AB 325) in 1990. Turf production and maintenance is a large part of the landscape industry and as this Update has turned out, will suffer substantial economic hardship if imposed. Why were we not asked to be among the stakeholders? Who spoke for the functional, environmental and aesthetic values of turf? Who spoke for the majority of homeowners who consider their lawns an important part of their landscape?

Having said that, please enter these comments in the record regarding our position on the MWEL Update 2015.

The original 1990 MWEL Update was based on the six legislative findings that the Update recites in Section 490, Purpose. Turf is consistent with each of those findings and is particularly well suited to (4)(a) “that landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems.” The original MWEL water budget was defined at 80% ET, just enough to achieve the legislative findings and maintain property owners freedom of plant choices. In 2008 the budget was lowered to 70% ET in a follow on effort by DWR (prompted by CUWCC) to discourage turf use.

In Section 490(b)(1) this Update goes beyond water efficiency by modifying the language stating the purpose as “promot(ing) the values and benefits of landscaping practices that integrate and transcend the conservation and efficient use of water.” That statement embodies an entirely new concept designed to change landscape norms. The implementation of that objective is found in the change of the definition of the ET adjustment factor from 70% to 50% ET. The new 50% ET factor is based on an average plant factor of .425 ET. It is generally agreed that all season turf requires 80% ET, so the effect is to essentially regulate turf into a very minor feature of the landscape **contrary to existing preferences.**

It is apparent the intent of this Update is to **dictate** a new social norm that defines landscapes without turf. We strongly object to the Department of Water Resources restriction of personal freedoms under any circumstances, particularly under the irrational premise of “transcendent” environmental benefits. For the record I have attached The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans. We could argue the benefits of turf and its well-justified water use ad infinitum, but this has gone beyond an objective discussion of beneficial water use to a the imposition of a new social norm based on the vision of a select few. Social policy should emanate from representatives of the people not the bureaucracy.

It is inconceivable that DWR has singled out homeowners to give up the freedom of their landscape choices to meet the challenge of the state’s water shortage. Eliminating turf would have negligible impact on supply. As far as I know, DWR is not regulating what water is used for in the agricultural and industrial water sectors. We are certainly not arguing that DWR go there, just emphasizing that homeowner’s lawns are being inexplicably singled out. We wonder whether this is an effort sponsored by the CUWCC to make permanent their member’s subsidized turf removal landscapes paid for by hundreds of millions of ratepayer dollars. Do they fear that homeowners will return to their lawn preferences when drought consciousness fades?

By attempting to change the landscape norm this Update is not consistent with the findings of the State Legislature. The original MWEL Update was authorized with the intent to promote landscape water use *efficiency*. Efficiency is not a “transcendent” vision of a

new social norm. It is an empirical calculation. This is regulatory overreach that goes far beyond what legislators envisioned. It will cost jobs, cause economic hardship, lower the quality of life, and most importantly infringe on personal freedoms. We respectfully request that DWR abandon this 2015 Update.

Sincerely,

Jurgen Gramckow
President